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AUTHOR Strychasz, Gloria; Arredondo, Mary
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ABSTRACT

The purpose of this study was to estimate the validity of the Competence subscale of the Teacher Staff Development Survey (TSDS) as a measure of the teacher efficiency construct. Results from regular education elementary school teachers (N=296) revealed a subscale structure of the TSDS that differed from the subscale structure originally designed by the Tempe (Arizona) School District. Specifically, six independent factors (i.e., subscales) were revealed: (1) Teacher Efficacy; (2) Organizational Efficacy; (3) Inclusion; (4) Resources; (5) Teaming; and (6) Self-Evaluation. The Competence subscale of the TSDS, as originally proposed by the Tempe School District, did not emerge as an independent subscale. Instead, this scale appeared to break down into two separate subscales: Teacher Efficacy and Organizational Efficacy. The Teacher Efficacy subscale of the TSDS was found not only to be a valid measure of teacher efficacy, but also to provide a better means of assessing the construct than the Competence subscale originally proposed by the Tempe School District. This subscale may be conceptualized as a measure of the personal teaching efficacy dimension of teacher efficacy. As an index of personal teaching efficacy, the Teacher Efficacy subscale appears to have utility in assessing the effectiveness of not only Project RIDE (Responding to Individual Differences in Education), but also other programs in which the objective is to enhance teachers' skills in dealing with "at-risk" students. The Teacher Efficacy subscale may not be appropriate, however, for evaluating programs where influencing teachers' perceptions of the general teaching efficacy dimension is of greater concern. Contains 4 tables and 24 references. (TS)

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The Teacher Staff Development Survey: Assessing its Reliability and Validity in Relation to Teacher Efficacy

Gloria Strychasz
Arizona State University

Mary Arredondo
Tempe, Arizona
School District No. 3

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The Teacher Staff Development Survey:

Assessing its Reliability and Validity in

Relation to Teacher Efficacy

In an effort to fulfill the promise of the Individuals with Disabilities Education Act (IDEA), proponents of a movement called the Regular Education Initiative (REI) have called for a restructuring of present systems serving students with disabilities (Reynolds, Wang, & Walberg, 1987; Will, 1986). Opposing the practice of placing students with special needs in segregated programs, the REI endorses the mainstreaming of exceptional children in regular education classrooms. Supporters of the REI contend that regular education can provide services to the full range of exceptional children and encourage the delivery of indirect special education services (Nelson, Smith, Taylor, Dodd, & Reavis, 1991).

Prereferral Interventions

To realize the goal of mainstreaming, supporters of the REI suggest implementing regular classroom interventions designed to prevent the referral, and subsequent disabled classification, of exceptional students (Will, 1986). Such strategies, termed "prereferral interventions," assist teachers in the education of students experiencing problems in their classrooms (Pugach & Johnson, 1989). Research on prereferral intervention approaches indicates that these strategies can maintain students in regular education programs (e.g., Graden, Casey, & Christenson, 1985), enhance teachers' abilities to accommodate students experiencing classroom difficulty (e.g., Pugach & Johnson, 1988), and positively affect student performance (e.g., Fuchs & Fuchs, 1990).

Project RIDE

The prereferral intervention program, Project RIDE (Responding to Individual Differences in Education), is based on the premise that "teachers, when provided with the necessary resources and support, can become their own best problem solvers" (Beck, 1990, p. 5). The Project RIDE model consists of three major components, including (a) a teacher self-evaluation questionnaire based on effective classroom practices, (b) a Computer Tactics Bank/Video Library, and (c) School-Wide Assistance Teams (Beck & Weast, 1990; Jones, Bender, & McLaughlin, 1992). The School-Wide Assistance Team (SWAT) involves a team of teachers working together to support their peers in resolving classroom problems. Based on the Teacher Assistance Team model developed by Chalfont, Pysh, and Moultrie (1979), the SWAT functions as a building-based, problem solving unit to assist teachers in accommodating students with special needs in the regular classroom (Beck, 1990).

Teacher Efficacy

Teacher efficacy and student achievement. An important contributor to the success of prereferral intervention programs is the level of efficacy of the teachers involved in the program (Sindelar, Griffin, Smith, and Watanabe, 1992). Teacher efficacy

refers to "the extent to which teachers believe they can affect student learning" (Dembo & Gibson, 1985, p. 173). Theoretical (e.g., Bandura, 1977) and empirical research (e.g., Berman & McLaughlin, 1977; Gibson & Dembo, 1984) suggest that teachers' beliefs about their abilities to teach are related to student classroom performance. According to Sparks (1988), teachers with high self-efficacy expect themselves to promote student learning regardless of perceived obstacles; consequently, they may be more willing to try innovative tactics to solve classroom problems. Meijer and Foster (1988) reported that highly efficacious teachers were less likely than teachers with low efficacy to refer a student experiencing classroom difficulties to special education. Thus, higher teacher efficacy may imply greater confidence in one's ability to manage classroom challenges (Sparks, 1988).

Dimensions of teacher efficacy. Researchers have applied Bandura's (1977, 1982) cognitive social learning theory to the teacher efficacy construct (Woolfolk & Hoy, 1990). Bandura hypothesizes that behavior is determined by both general outcome expectations and efficacy expectations (Dembo & Gibson, 1985; Woolfolk & Hoy, 1990). Applied to teacher efficacy, outcome expectations refer to what researchers (e.g., Ashton & Webb, 1986; Berman & McLaughlin, 1977; Gibson & Dembo, 1984) have termed "general teaching efficacy:" teachers' beliefs about the extent to which students can be instructed given such factors as student IQ, family background, and school conditions. Efficacy expectations refer to what researchers have labeled "personal teaching efficacy:" teachers' judgments about their own abilities to bring about positive student change (Gibson & Dembo, 1984; Woolfolk & Hoy, 1990). Thus, the teacher efficacy construct has been conceptualized to include two dimensions, namely general teaching efficacy and personal teaching efficacy (Ashton & Webb, 1986; Berman & McLaughlin, 1977; Gibson & Dembo, 1984; Woolfolk & Hoy, 1990).

Teacher Efficacy and Project RIDE

Increasing the level of teacher efficacy is a meaningful objective to consider when instituting a prereferral intervention model. Low self-efficacy may be contributing to teachers' perceived lack of control over student learning (see Lieberman & Miller, 1984). In terms of classroom management, teachers who believe that they can positively alter classroom behavior, as predicted by self-efficacy theory, will be more effective classroom managers (Bandura, 1982; Gibson & Dembo, 1984; Safran, 1989). As Sparks (1988) suggests, "one way to increase (or at least capitalize on) self-efficacy is to provide intimate, structured small-group sharing and problem-solving sessions for teachers" (p. 117). The prereferral intervention program, Project RIDE, makes use of such a small team of teachers (i.e., SWATs), in which collaborative problem solving occurs (Beck & Weast, 1989).

Hence, the SWAT not only functions to benefit students who might otherwise be referred to special education, but also may promote teacher efficacy.

Project RIDE has been instituted throughout schools in the Tempe, Arizona, School District. In an effort to assess the effectiveness of the program, the Tempe School District has developed the Teacher Staff Development Survey (TSDS). The TSDS was designed to assess teachers' perceptions of how they and others teach and manage "at-risk" students. "At-risk" students refer to those hard-to-teach students who are in jeopardy of failing or who are at risk of being referred to special education. The TSDS consists of six subscales designed to measure various teacher attitudes that are considered to be important to the success of Project RIDE. The subscales of the TSDS include Teaming, Inclusion, Shared Responsibility, Competence, Resources, and Changes.

Of the six subscales of the TSDS, the Competence subscale was the main focus of the present study. The purpose of this study was to estimate the validity of the Competence subscale of the TSDS as a measure of teacher efficacy. First, using factor analysis, the construct validity of the subscale was tested. Second, using test-retest procedures, the reliability of the TSDS was estimated. Lastly, the concurrent and convergent validities of the Competence subscale of the TSDS were examined.

Method

Subjects

Two hundred ninety-two regular education teachers employed in elementary schools in the Tempe School District participated in this study. The Tempe School District is a suburban school district located east of Phoenix, Arizona. The district consists of nineteen elementary schools (kindergarten through third grades) and four middle schools (fourth through sixth grades), with a total enrollment of 13,385 students. The student population of the district, as of December, 1993, included 6.4 percent American Indian; 9.7 percent Black; 3.6 percent Pacific Islander/Asian; 25.9 percent Hispanic; and 54.4 percent White. According to December, 1994, records, 49 percent of the students received free or reduced lunches.

One thousand thirty questionnaires were distributed to all teachers employed in the Tempe School District; three hundred sixty questionnaires were returned to the district office. Of the 360 questionnaires that were returned, 292 were completed by regular education teachers in elementary schools. For test-retest procedures, 150 questionnaires were sent to regular education teachers in the following elementary schools in the Tempe School District: Bustoz, Carminati, Evans, Nevitt, Scales, and Wood Schools. These schools were selected because they had undergone Project RIDE training and had begun

implementation of the program during the 1994-95 academic year. Seventy-four retest questionnaires were returned to the district; the responses to these questionnaires were used in the test-retest analyses.

Measures

Teacher Staff Development Survey. The Teacher Staff Development Survey (TSDS) was developed by Walter R. Berard, Ed.D., in conjunction with the Tempe School District to assess the effectiveness of district intervention programs, including Project RIDE. Factor analytic procedures were not employed in the construction of the survey; instead, a more "rational" analysis was utilized whereby issues considered to be important in measuring the effects of Project RIDE were included in the survey. Such issues included teacher attitudes regarding teaming, inclusion, competence, changes, resources, and shared responsibility. In addition, the TSDS was designed to assess teachers' perceptions of how teachers in their district instruct and manage "at-risk" students. The TSDS consists of six teacher attitudinal scales labeled Teaming, Inclusion, Shared Responsibility, Competence, Resources, and Changes. Of the six subscales of the TSDS, the Competence subscale was the focus of the study. The Competence subscale was designed to measure teachers' attitudes regarding their skills in solving problems and designing interventions for "at-risk" students.

Teacher Efficacy Scale. The Teacher Efficacy Scale was developed by Gibson and Dembo (1984) to assess teacher efficacy. According to a factor analysis conducted by Gibson and Dembo (1984), this scale yielded two substantial factors. Factor one accounted for 18.2 percent of the total variance and factor two accounted for 10.6 percent of the total variance. Each of the remaining factors accounted for less than 6 percent of the total variance. Factor one, labeled Personal Teaching Efficacy (PTE), appears to represent a teacher's "belief that one has the skills and abilities to bring about student learning" (Gibson & Dembo, 1984, p. 573). Factor two, labeled general Teaching Efficacy (TE), appears to represent a teacher's "belief that any teacher's ability to bring about change is significantly limited by factors external to the teacher," such as the student's home environment (Gibson & Dembo, 1984, p. 574). These two factors--PTE and TE--correspond to Bandura's (1977) dimensions of teacher efficacy, self-efficacy and outcome expectancy, respectively. According to Gibson and Dembo's (1984) analysis, internal consistency reliability tests yielded Cronbach's alpha coefficients of .78 for the PTE factor, .75 for the TE factor, and .79 for the total 16 items.

Setting and Procedures

For data collection purposes, the TSDS and the Teacher Efficacy Scale (Gibson & Dembo, 1984) were combined into one questionnaire, and two forms of the questionnaire (e.g., Form A and Form B) were constructed. The presentation of each form was counterbalanced. For test-retest purposes, questionnaires that were administered to teachers participating in the retest procedure were coded. The investigator maintained a list of teachers and their respective codes.

Participation in this study was voluntary. All teachers in the Tempe School District received the combined TSDS-Teacher Efficacy Scale questionnaires during a faculty meeting or in their school mailboxes. Once teachers completed the questionnaires, they returned them to their principal, who then forwarded the questionnaires to the investigator. For those schools participating in the retest procedure, a second administration of the questionnaire was conducted two weeks after the first administration. Teachers participating in the retest procedure received only the TSDS questionnaire; procedures for the second administration of the TSDS and return of the questionnaire were similar to the procedures employed during the first administration.

Results

Construct Validity of the Competence Subscale of the TSDS

Teacher responses to the TSDS were submitted to principal components analysis with varimax rotation; no factor limitations were set. Using Kaiser's criterion of eigenvalues greater than one (Kaiser, 1974), in combination with Cattell's scree test (Cattell, 1965), six factors emerged from the TSDS that accounted for 67.5% of the variance. The rotated factor matrix, displayed in Table 3, lists factor loadings for each item on the TSDS. The factors that emerged from these procedures are labeled as follows: Teacher Efficacy, Organizational Efficacy, Inclusion, Resources, Teaming, and Self-Evaluation (see Table 4). The factor analysis results revealed a somewhat different TSDS subscale structure than the structure originally proposed by the Tempe School District. Specifically, the subscale labeled Competence by the Tempe School District was shown to break down into two independent factors, labeled "Teacher Efficacy" and "Organizational Efficacy" (see Table 5).

In briefly summarizing the factor analysis results, three of the six TSDS scales constructed by the Tempe School District--the Teaming, Inclusion, and Resources scales--appeared to emerge from the factor analytic procedures used in this study. In addition, three unique scales--the Teacher Efficacy, Organizational Efficacy, and Self-Evaluation scales--were revealed by factor analytic procedures. Further tests of validity were conducted on the Teacher Efficacy and Organizational

Efficacy scales that emerged from factor analytic procedures. These analyses were conducted to examine each scale's relationship to the teacher efficacy construct.

Table 3

Rotated factor matrix of the TSDS.

	Factors					
Question#	Fac1	Fac2	Fac3	Fac4	Fac5	Fac6
Q3	.78786	.16302	.09483	.09309	.11087	.04385
Q1	.76160	.21189	.11032	.13344	.01755	.06831
Q8	.73142	.26301	.14189	.15140	-.01342	.19191
Q5	.65889	.16949	.18802	-.04607	.03293	.20623
Q7	.61407	.09265	.11194	.24495	.25208	.07774
Q2	.22579	.79012	.02545	.14449	.01781	.02733
Q6	.22218	.76520	.05412	.00673	.09427	.08253
Q9	.35377	.72186	.06356	.22081	.06344	.04502
Q4	.36352	.71164	.00800	.20688	.15134	-.03134
Q16	-.20222	.55467	.30791	.07644	.14516	.20427
Q17	.00767	.09103	.73135	.09979	.10164	.08833
Q14	.20522	.10004	.68766	.29999	.13175	-.07967
Q15	.24106	.02572	.67500	.22944	.18117	-.13732
Q18	.16960	.02430	.66811	-.14347	.10867	.25918
Q10	.17622	.14796	.17430	.89112	.05749	.09724
Q11	.12269	.22220	.20233	.87744	.09945	.09205
Q20	.33617	.25523	-.04418	.42359	.17920	.27204
Q13	.11513	.11330	.20284	.12857	.91688	.08043
Q12	.08688	.13682	.20836	.08703	.90970	.09253
Q19	.23746	.21823	.29369	-.02592	.35251	.34940
Q21	.18095	.04395	-.01566	.15398	.05551	.86964
Q22	14377	.07703	.09927	.07213	.09029	.81840

Table 4

TSDS scales revealed by factor analytic procedures.

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Teacher Efficacy	Organizational Efficacy	Inclusion	Resources	Teaming	Self-Evaluation
Q1	Q2	Q14	Q10	Q12	Q21
Q3	Q4	Q15	Q11	Q13	Q22
Q5	Q6	Q17	Q20	Q19	
Q7	Q9	Q18			
Q8	Q16				

Table 5

TSDS scales proposed by the Tempe School District and their corresponding item numbers.

Scales					
Competence	Inclusion	Resources	Teaming	Shared Responsibility	Changes
Q1 Q6	Q14	Q10	Q12	Q12	Q1 Q7 Q15
Q2 Q7	Q15	Q11	Q13	Q13	Q2 Q8 Q18
Q3 Q8	Q16		Q16	Q16	Q3 Q9 Q19
Q4 Q9	Q17		Q19	Q17	Q4 Q10 Q20
Q5	Q18				Q5 Q11 Q21
					Q6 Q14 Q22

Reliability of the TSDS

To estimate the reliability of the TSDS, test-retest procedures were used, with retesting occurring two to three weeks after the first administration of the instrument. Subjects' responses to the two administrations of the TSDS were correlated. The obtained coefficient of stability was equal to .74, suggesting that the TSDS is consistent over time.

Concurrent Validity of the Teacher Efficacy Subscale of the TSDS

To examine the concurrent validity of the Teacher Efficacy subscale of the TSDS, the subscale was correlated with the composite teacher efficacy score obtained from Gibson and Dembo's (1984) Teacher Efficacy Scale. A correlation of .36 ($p < .000$) was obtained between the Teacher Efficacy subscale of the TSDS and Gibson and Dembo's composite teacher efficacy

score. Because approximately 13 percent of the shared variance was accounted for, the relationship between the Teacher Efficacy scale of the TSDS and Gibson and Dembo's composite teacher efficacy score was judged to be practically significant. The relationship between the Organizational Efficacy subscale of the TSDS and teacher efficacy was also examined. A correlation of .13 ($p<.013$) was obtained between the Organizational Efficacy scale of the TSDS and Gibson and Dembo's composite teacher efficacy score. Because only approximately two percent of the shared variance was accounted for, it may be assumed that the Organizational Efficacy scale of the TSDS lacks practical significance as a measure of the teacher efficacy construct.

Convergent Validity of the Teacher Efficacy Subscale of the TSDS

To estimate the convergent validity of the Teacher Efficacy subscale of the TSDS, the subscale was correlated with each dimension of teacher efficacy (i.e., personal teaching efficacy [PTE] and general teaching efficacy [TE]) as measured by Gibson and Dembo's (1984) Teacher Efficacy Scale. A correlation of .30 ($p < .000$) was obtained between Gibson and Dembo's PTE factor and the Teacher Efficacy subscale of the TSDS. Approximately nine percent of the shared variance was accounted for, indicating that the relationship between the PTE dimension and the Teacher Efficacy subscale may be practically significant. The TE factor of the Teacher Efficacy Scale was then correlated with the Teacher Efficacy subscale of the TSDS. A correlation of -.21 ($p<.000$) was obtained between the TE factor and the Teacher Efficacy subscale; an inverse relationship was observed because low scores on the TE dimension represent more efficacious responses. Because only approximately four percent of the shared variance was accounted for, it appears that the Teacher Efficacy subscale of the TSDS may lack practical significance as a measure of the general teaching efficacy dimension. Thus, the results suggest that the Teacher Efficacy subscale of the TSDS better assesses the PTE dimension than the TE dimension of teacher efficacy.

Discussion

The purpose of the present study was to estimate the validity of the Competence subscale of the Teacher Staff Development Survey (TSDS) as a measure of the teacher efficacy construct. The results of this study revealed a subscale structure of the TSDS that differs from the subscale structure originally designed by the Tempe School District. Specifically, six independent factors (i.e., subscales) were revealed; these subscales were labeled as follows: Teacher Efficacy, Organizational Efficacy, Inclusion, Resources, Teaming, and Self-Evaluation. The Competence subscale of the TSDS, as originally proposed by the Tempe School District, did not emerge as an independent subscale based on the analyses used in this study. Instead, this

scale appeared to break down into two separate subscales, labeled Teacher Efficacy and Organizational Efficacy. The Teacher Efficacy subscale of the TSDS was found not only to be a valid measure of teacher efficacy, but also to provide a better means of assessing the construct than the Competence subscale originally proposed by the Tempe School District. A closer examination of the Teacher Efficacy subscale of the TSDS revealed that this scale may be conceptualized as a measure of the personal teaching efficacy dimension of teacher efficacy. As an index of personal teaching efficacy, the Teacher Efficacy subscale appears to have utility in assessing the effectiveness of not only Project RIDE, but also other programs in which the objective is to enhance teachers' skills in dealing with "at-risk" students. The Teacher Efficacy subscale may not be appropriate, however, for evaluating programs where influencing teachers' perceptions of the general teaching efficacy dimension is of greater concern.

When assessing the effectiveness of school-wide programs such as Project RIDE, the assessment of organizational efficacy, in addition to personal teaching efficacy, may be critical. The Organizational Efficacy scale of the TSDS may provide a means of measuring the organizational efficacy construct. As such, further validation of the Organizational Efficacy scale is needed. In conclusion, future investigations should examine the relationship between personal teaching efficacy and organizational efficacy, and how teachers' perceptions of the organizational efficacy of their school influences the effectiveness of prereferral intervention programs such as Project RIDE.

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